



AN ISO 9001 : 2008 COMPANY & NABL ACCREDITED LABORATORY AS PER ISO/IEC 17025:2005

4, 7TH MAIN MALLESWARAM, BANGALORE -3

TEST RESULTS OF GRADATION FOR WMM

Lab ID : CP-RW-2017-09-14-02 Date: 16-09-2017
Customer : Assistant Executive Engineer, Kodigehalli Sub division, BBMP, Bangalore.
Address : Kodigehalli Sub division, BBMP, Bangalore.
Project Name : Providing and installation of water supply pipelines to existing water supply network in ward no.8 Kodigehalli.
Agency : Sri. Sanjay Reddy H.J. No.04, 9th K main, Hosahalli, Vijayanagara, Bangalore-560040
Customer Reference : BBMP/EE/BTP/WO/193/2016-17
Source of Sample : Sample supplied by Agency
Sample Condition : Satisfactory
Date of Receipt : 14-09-2017
Sample ID No : 2017-09-14-02/01
Type of Mix : WMM (Wet Mix Macadam)
Date of test : 14-09-2017
Oven Dry Weight : 11000 Grams

IS Sieve Size(mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Spec.I.Vide Table 400.13 MORTH Specification
53	0	0	0.0	100.0	100
45	298	298	2.7	97.3	95-100
22.4	2364	2662	24.2	75.8	60-80
11.2	2267	4929	44.8	55.2	40-60
4.75	2352	7281	66.2	33.8	25-40
2.36	1634	8915	81.0	19.0	15-30
0.6	653	9568	87.0	13.0	8-22
0.075	1323	10891	99.0	1.0	0-5

Note:-

The results pertain to the samples received and tested.

All information furnished by Customer/Representative

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R. Karthik Rechan
R KARTHIK RECHAN
Authorized Signatory
Quality Manager

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End of Report

M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

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4, 7TH MAIN MALLESWARAM, BANGALORE -3

Certificate No.: TC-5548

TEST REPORT OF AGGEGRATE IMPACT VALUE

IS: 2386 Part IV

Lab ID : CP-RW-2017-09-14-02 . Date: 16-09-2017
 Customer : Assistant Executive Engineer, Kodigehalli Sub division, BBMP, Bangalore.
 Address : Kodigehalli Sub division, BBMP, Bangalore.
 Project Name : Providing and installation of water supply pipelines to existing water supply network in ward no.8 Kodigehalli.
 Agency : Sri. Sanjay Reddy H.J. No.04, 9th K main, Hosahalli, Vijayanagara, Bangalore-560040
 Customer Reference : BBMP/EE/BTP/WO/193/2016-17
 Source of Sample : Sample supplied by Agency
 Sample Condition : Satisfactory
 Date of Receipt : 14-09-2017
 Sample ID No : 2017-09-14-02/01
 Type of Mix : Coarse Aggregate for WMM (Wet Mix Macadam)
 Date of test : 14-09-2017

Sl.No	Particulars of observations	Index	TEST 1	TEST 2
1	Total weight of the surface dry sample sample (passing 12.5 mm and retained on 10mm sieve)	A	302.6	302.6
2	Weight of fraction passing 2.36mm sieve After giving 15 blows	B	71.4	72.0
3	weight of fraction retained 2.36mm sieve After giving 15 blows	C	230.9	230.2
4	Total weight of (B+C) is less than the initial weight (Weight A) by more than one gram the result shall be discarded and a fresh test made.	A-(B+C)	0.3	0.4
5	Aggregate impact value	(B/A)*100	23.6	23.8
6	Aggregate impact value (Mean of two tests)	Percentage	23.7	

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 Authorized Signatory
 Quality Manager

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M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

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Certificate No.: TC-5548

DETERMINATION OF FLAKINESS INDEX AND ELONGATION INDEX OF COARSE AGGREGATE (IS 2386 (Part 1) 1963 (RA 2007)

Lab ID : CP-RW-2017-09-14-02 Date: 16-09-2017
Customer : Assistant Executive Engineer, Kodigehalli Sub division, BBMP, Bangalore.
Address : Kodigehalli Sub division, BBMP, Bangalore.
Project Name : Providing and installation of water supply pipelines to existing water supply network in ward no.8 Kodigehalli.
Agency : Sri. Sanjay Reddy H.J. No.04, 9th K main, Hosahalli, Vijayanagara, Bangalore-560040
Customer Reference : BBMP/EE/BTP/WO/193/2016-17
Source of Sample : Sample supplied by Agency
Sample Condition : Satisfactory
Date of Receipt : 14-09-2017
Sample ID No : 2017-09-14-02/01
Type of Mix : Coarse Aggregate for WMM (Wet Mix Macadam)
Date of test : 14-09-2017

Result:

Index	Percentage of Flakiness and Elongation Index	Secified limits as per MORTH specification table 400-12
Flakiness Index	9.8%	Combined Flakiness & Elongation Index for WMM is Maximum 35%
Elongation Index	10.5%	
Combined Flakiness and Elongation Index for WMM	20.3%	

Note:-

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Certificate No.: TC-5548

TEST REPORT ON BITUMEN

Lab ID : CP-2017-09-14-02 Date: 17-09-2017

Customer : Assistant Executive Engineer, Kodigehalli Sub division,
BBMP, Bangalore.

Address : Kodigehalli Sub division, BBMP, Bangalore.

Project Name : Providing and installation of water supply pipelines to existing water
supply network in ward no.8 Kodigehalli.

Agency : Sri. Sanjay Reddy H.J. No.04, 9th K main, Hosahalli, Vijayanagara,
Bangalore-560040

Customer's Reference : BBMP/EE/BTP/WO/193/2016-17

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 14-09-2017

Sample ID No : 2017-09-14-02/01

Sample Type : Bitumen

Reference to BIS codes : IS: 1201-1220(1978) (Reaffirmed-2004)

Date of test : 15-09-2017

Test Results

Sl.no	Name of Test	Result	Requirements as per IS:73-2013
1	Penetration at 25°C , in 1/10th mm	62	60 to 70
2	Softening Point, °C	48.6	Min. 40°C
3	Ductility, cm	96	Min. 75cm
4	Flash point, °C	234	Min. 220°C
	Fire point, °C	264	

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**TEST RESULTS OF GRADATION FOR BC
IS 2386 (Part 1) 1963 (RA 2007)**

Lab ID : CP-RW-2017-09-19-05 Date: 21-09-2017
Customer : Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address : Kodigehalli Sub Division, BBMP, Bangalore.
Project Name : Providing and installation of water supply pipelines to existing water supply network in ward no.8 Kodigehalli.
Agency : Sri. Sanjay Reddy H.J. No.04, 9th K main, Hosahalli, Vijayanagara, Bangalore-560040
Customer Reference : BBMP/EE/BTP/WO/193/2016-17
Source of Sample : Sample supplied by Agency
Sample Condition : Satisfactory
Date of Receipt : 19-09-2017
Sample ID No : 2017-09-19-05/01
Type of Mix : BC-Plant (Bituminous Concrete)
Date of test : 19-09-2017
Oven Dry Weight : 5000 Grams

IS Sieve Size (mm)	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Specified limits as per MORTH specification table 500-17(grading-2)
19	0	0	0.0	100.0	100
13.2	73	73	1.5	98.5	90-100
9.5	587	660	13.2	86.8	70-88
4.75	1194	1854	37.1	62.9	53-71
2.36	1017	2871	57.4	42.6	42-58
1.18	402	3273	65.5	34.5	34-48
0.6	423	3696	73.9	26.1	26-38
0.3	396	4092	81.8	18.2	18-28
0.15	288	4380	87.6	12.4	12-20
0.075	214	4594	91.9	8.1	4-10
PAN	106	4700	94	6.0	0

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R KARTHIK RECHAN
Authorized Signatory
Quality Manager

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M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

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Certificate No.: TC-5548

PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS CONCRETE

Lab ID : CP-RW-2017-09-19-05 Date: 22-09-2017
 Customer : Asisstant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
 Address : Kodigehalli Sub Division, BBMP, Bangalore.
 Project Name : Providing and installation of water supply pipelines to existing water supply network in ward no.8 Kodigehalli.
 Agency : Sri. Sanjay Reddy H.J. No.04, 9th K main, Hosahalli, Vijayanagara, Bangalore-560040
 Customer Reference : BBMP/EE/BTP/WO/193/2016-17
 Source of Sample : Sample supplied by Agency
 Sample Condition : Satisfactory
 Date of Receipt : 19-09-2017
 Sample ID No : 2017-09-19-05/01
 Type of Mix : BC (Bituminous Concrete)
 Date of test : 19-09-2017

Table 500-16 : Physical Requirements fo Coarse Aggregate for Bituminous Concrete

Property	Test	Result	Specification	Method of Test
Partical Shape	Flakiness Index	11.8	Combined Flakiness & Elongation Index for BC is Maximum 35%	IS:2386 Part I
	Elongation Index	10.3		
Strength	Aggregate Impact Value	22.8	Maximum 24%	IS:2386 Part IV
Specific gravity	Specific gravity	2.27	Maximum 2.7	IS:2386 Part III
Water Absorption	Water Absorption	0.21	Maximum 2%	IS:2386 Part III

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Authorized Signatory
Quallity Manager

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M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

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TEST REPORT OF AGGREGATE STRIPPING VALUE OF ROAD AGGREGATE (IS:6241)

Lab ID : CP-RW-2017-09-19-05, Date: 22-09-2017
Customer : Asisstant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address : Kodigehalli Sub Division, BBMP, Bangalore.
Project Name : Providing and installation of water supply pipelines to existing water supply network in ward no.8 Kodigehalli.
Agency : Sri. Sanjay Reddy H.J. No.04, 9th K main, Hosahalli, Vijayanagara, Bangalore-560040
Customer Reference : BBMP/EE/BTP/WO/193/2016-17
Source of Sample : Sample supplied by Agency
Sample Condition : Satisfactory
Date of Receipt : 19-09-2017
Sample ID No : 2017-09-19-05/01
Type of Mix : BC(Bitumenous Concrete)
Date of test : 19-09-2017

Type of Binder : 60/70
% of Binder Used : 5.0%
Weight of Aggregate : 200.0 gm
Weight of Binder : 10.0 gm
Temperature of water bath : 40°C

No of test	Retained Stripping Percentage	Stripping Percentage	Average Retained Stripping Percentage	Secified limits as per MORTH specification table 500-8
1	98.0	2.0	97.5	Minimum Retained Coating 95%
2	97.5	2.5		
3	97.0	3.0		

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Rane



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R. K. R.
R KARTHIK RECHAN
Authorized Signatory
Quality Manager

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M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

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4, 7TH MAIN MALLESWARAM, BANGALORE -3

TESTS RESULTS ON STABILITY OF MIX

Lab ID : CP-RW-2017-09-19-05 Date: 22-09-2017
Customer : Asisstant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address : Kodigehalli Sub Division, BBMP, Bangalore.
Project Name : Providing and installation of water supply pipelines to existing water supply network in ward no.8 Kodigehalli.
Agency : Sri. Sanjay Reddy H.J. No.04, 9th K main, Hosahalli, Vijayanagara, Bangalore-560040
Customer Reference : BBMP/EE/BTP/WO/193/2016-17
Source of Sample : Hot Mix Plant, Bangalore
Sample Condition : Satisfactory
Date of Receipt : 19-09-2017
Sample ID No : 2017-09-19-05/01
Type of Mix : BC (Bituminous Concrete)
Date of test : 19-09-2017

The results of the tests conducted on the Bituminous Concrete mix sample are as follow				
Sl.No	Particulars of observations	TEST 1	TEST 2	Secified limits as per MORTH specification table 500-11
1	Marshal Stability at 60°C, KN	11.56	11.64	10KN(min)
2	Marshal flow at 60°C, mm	3.38	3.45	2-4
3	Percent air Voids	4.65	4.73	3-5
4	Percent Voids in mineral Aggregate(VMA %)	14.28	14.26	13-15
5	Percent Voids filled with Bitumen(VFB %)	72.87	71.93	65-75
6	Density, g/cc	2.22	2.23	—

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[Signature]
R KARTHIK RECHAN
Authorized Signatory
Quality Manager

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M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

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**TEST RESULTS OF GRADATION FOR BC
IS 2386 (Part 1) 1963 (RA 2011)**

Lab ID : CP-RW-2017-09-25-05 **Date:** 27-09-2017
Customer : Asisstant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address : Kodigehalli Sub Division, BBMP, Bangalore.
Project Name : Providing and installation of water supply pipelines to existing water supply network in ward no.8 Kodigehalli.
Agency : Sri. Sanjay Reddy H.J. No.04, 9th K main, Hosahalli, Vijayanagara, Bangalore-560040
Customer Reference : BBMP/EE/BTP/WO/193/2016-17
Source of Sample : Sample supplied by Agency
Date of Receipt : 25-09-2017
Sample ID No : 2017-09-25-05/01
Type of Mix : BC (Bituminous Concrete)
Date of test : 25-09-2017

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	A	500	501
2	Weight of the sample After extraction	B	469	470
3	Bitumen percentage	$\frac{A-B}{A} \times 100$ A	6.20	6.19
4	Average percentage	%	6.2	



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R KARTHIK RECHAN
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M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

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Lab ID : CP-RW-2017-09-25-05

Date: 27-09-2017

Sample ID : 2017-09-25-05/01

AFTER EXTRACTION - Trail-1

Total Weight of the Sample(gm) : 469

IS Sieve Size (mm)	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	12	12	2.6	97.4	90-100
9.5	68	80	17.1	82.9	70-88
4.75	126	206	43.9	56.1	53-71
2.36	62	268	57.1	42.9	42-58
1.18	33	301	64.2	35.8	34-48
0.6	27	328	69.9	30.1	26-38
0.3	49	377	80.4	19.6	18-28
0.15	35	412	87.8	12.2	12-20
0.075	35	447	95.3	4.7	4-10

AFTER EXTRACTION - Trail-2

Total Weight of the Sample(gm) : 470

IS Sieve Size (mm)	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	14	14	3.0	97.0	90-100
9.5	73	87	18.5	81.5	70-88
4.75	132	219	46.6	53.4	53-71
2.36	51	270	57.4	42.6	42-58
1.18	38	308	65.5	34.5	34-48
0.6	34	342	72.8	27.2	26-38
0.3	39	381	81.1	18.9	18-28
0.15	25	406	86.4	13.6	12-20
0.075	28	434	92.3	7.7	4-10

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Authorized Signatory
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M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

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